

**ENTERED**

June 28, 2019

David J. Bradley, Clerk

**IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF TEXAS  
HOUSTON DIVISION**

BOLTEX MANUFACTURING  
COMPANY, L.P., *et al.*,  
*Plaintiffs,*

v.

ULMA PIPING USA CORP., *et al.*,  
*Defendants.*

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CIVIL ACTION NO. 4:17-CV-01400

**ORDER**

Defendants Ulma Forja, S. Coop and Ulma Piping USA Corp. (collectively “Defendants” or “Ulma”) have filed a Motion to Exclude the expert testimony of Dr. Dana J. Medlin (“Medlin”) (Doc. No. 93). Plaintiffs Boltex Manufacturing Company, L.P. and Weldbend Corporation (collectively referred to as “Boltex” or “Plaintiffs”) have filed a response (Doc. No. 120) and subsequently Ulma has filed a Reply (Doc. No. 137).

**I.**

Medlin is a metallurgist. He has undergraduate and master’s degrees in mechanical engineering and holds a Ph.D. in Materials Science Engineering (all three degrees from the University of Nebraska). He has spent the last thirty plus years either working in private industry, academia, or as a consultant in the field of metallurgical and material science engineering. He is widely published and is a member of many related professional associations.

This Court need not go into more detail about his education or background in this field as that is not the focus of Ulma’s argument to exclude his testimony. As least as far as this motion is concerned, Ulma concedes (or at least does not argue against) the fact that Medlin is an expert in his field.

Instead, Ulma's motion is based on two primary propositions: 1) that Medlin failed to exercise a control group and 2) that he failed to follow the requirements of the American Society for Testing and Materials ("ASTM") found in ASTM E112, which governs test methods for determining average grain size. This latter attack has three subparts: 1) that the use of the comparison method is not reliable; 2) that Medlin failed to observe enough different fields to adequately calculate confidence intervals when he utilized the intercept method; and 3) that Medlin failed to adjust his grain size numbers based upon a calculation of the volume fraction of ferrite. Boltex not surprisingly opposes the motion and finds Ulma's arguments to be misplaced.

## II.

In summary, Medlin seeks to offer an opinion that the Ulma flanges he tested were either not normalized or at least not normalized properly. Put simply, Medlin was provided with samples of Ulma flanges that were obtained on the open market. These flanges were purportedly normalized. Normalization is a heat treatment process whereby a steel object is reheated to achieve both grain refinement and homogenization, which improves the uniformity of the entire steel component which in turn improves strength and toughness and makes it more resistant to brittle fracture.<sup>1</sup> Once Medlin received the Ulma flanges he took two samples from each flange. One sample was analyzed "as forged," the second sample was normalized by Medlin and then analyzed. This test was based upon the proposition that a previously un-heat-treated steel object will undergo grain refinement and become much more homogenous (uniform) when normalized for the first time; but a previously normalized object will undergo very little change when it is heat-treated a second time. Thus, if little or no difference between the two samples is observed after Medlin normalized one, the conclusion would be that the flange had been previously normalized. If a significant difference between the normalized sample and the "as forged"

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<sup>1</sup> The Court uses normalization and heat treatment as synonyms solely for purposes of this order.

sample is observed, this indicates that the flange had not been previously normalized or that its prior normalization process had been inadequate. Medlin compared the before (“as forged”) and after (heat treated) samples and in the vast majority observed the uniformity of the grain structure to be greatly enhanced in those samples he heat treated, prompting Medlin to reach the conclusion that the flanges in question had not been previously normalized, despite the fact that each flange indicated otherwise.

He then sought to quantify the degree of grain refinement by two different methods: 1) the comparative method and 2) the circular intercept procedure. These procedures are described in ASTM E112. Using these procedures, Medlin concluded that the flange samples he normalized yielded microstructures that were significantly more refined than the “as forged.” He also concluded that the normalized samples had significantly less Widmānstätten ferrite, developed more equiaxed ferrite and pearlite grains, and a decreased amount of banding. According to Medlin, this information confirmed his original opinion that the test samples had not previously been normalized.

### III.

Ulma predicates its motion to exclude on the Supreme Court’s decisions in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) and *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137 (1999) and FED. R. EVID. 702. As stated above, the attack on Medlin’s testimony is not based upon his qualifications, but instead focuses on his methodology. Defendants contend that his opinions should not be presented to the jury because there is no “fit” between data and opinion citing *Chan v. Coggins*, 294 F. App’x 934, 937 (5th Cir. 2008). Ulma argues that there is simply “too great an analytical gap between the data and the opinion proffered.” *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997).

#### **A. Failure to Use a Control Group**

Ulma claims the entirety of Medlin's opinions should be excluded because Defendants claim Medlin did not use a "control group." Ulma suggests, without citation to a scientific or legal authority, that Medlin should have used Boltex's flanges as a control. Ulma further objects to what it describes as Medlin's "subjectivity" in his observations of the microstructure of the samples he analyzed.

The Court finds no basis for exclusion on these arguments. First, Defendants do not seriously contest the two basic conclusions that underpin the analysis—those being: 1) that normalization refines grain structure and promotes a more homogenous grain structure and 2) that any such refinement/changes in the microstructure resulting from the normalization process would be significantly reduced or non-existent if the sample has previously been properly normalized.<sup>2</sup>

That being the case, Medlin used the samples taken from the Ulma flanges but which he did not then normalize, as a control or as a model for comparison for those he did normalize. The fact that Medlin did not test flanges made by the Plaintiff or some other manufacturer may be excellent fodder for cross-examination, but it does not render his conclusions regarding Ulma's flanges inadmissible.

Secondly, like a doctor examining an x-ray, this is a process where some subjective analysis is inherently involved. As explained below, the ASTM standard discusses this very point. Nevertheless, Medlin is qualified both by training and experience to make this analysis; and his conclusions, as documented in his report, are supported by objective observations which are memorialized by photographic evidence. Thus, if his conclusions are incorrect, they should be easily controverted.

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<sup>2</sup> Indeed, Ulma's own expert appears to have at least agreed with the first proposition.

## **B. Objections to Medlin's Testimony Regarding Grain Size**

By their nature grain size presents a somewhat imprecise concept. Even the controlling ASTM Standard E-112-13 speaks only in terms of "estimation" of "average grain size" and describes the accepted procedures as "not an exact science." ASTM E112-5.1. Despite the lack of exactness inherent in the art, Ulma's specific objections are three-fold.

First, it argues Medlin's conclusions should be excluded because he used the "comparison method" which it claims is the least reliable of the recognized methods. The problem with this objection is that the comparison method, despite whatever shortfalls it has, is a well-recognized means of determining average grain size. In fact, the ASTM standard begins with the statement:

### **1. Scope**

1.1 These test methods cover the measurement of average grain size and include *the comparison procedure*, the planimetric (or Jeffries) procedure, and the intercept procedures.

For purposes of this motion, this Court will assume, as Ulma claims, that the comparison method is the "least accurate method" of these three. Despite hypothetically accepting the accuracy of this label, this methodology remains one that is clearly accepted in the metallurgic community. The fact that there may be better or more precise methods does not render an opinion based upon a scientifically accepted methodology inadmissible.

Medlin also apparently used the Abrams Three-Circle Intercept Method as a means to provide a way for another expert to check on the accuracy of the results he achieved by using the comparison test. (Medlin Dep. pp. 128-29). Section 14.3 of ASTM E112-13 describes the intercept method in detail. Of particular interest to this motion is § 14.3.2.1 where it states: "[b]ecause the grain structure will vary somewhat from field to field, at least five widely spaced fields should be selected. Some metallographers feel more comfortable counting 10 fields with


about 40 to 50 counts per field.” Medlin admits he only selected to count two fields. Ulma claims his opinions should be excluded due to this. This argument might be valid if Medline rested his opinion solely on an abbreviated intercept inspection, but that is not the case.

While this Court agrees that Medlin’s use of only two fields falls far short of the five to ten fields recommended in the ASTM standard, his choice to use an abbreviated intercept procedure as a means for others (or for his own use) to confirm his comparison test results does not invalidate his testimony. He used a recognized method initially—if his use of the intercept method as a backstop was not compliant with the ASTM suggested protocol, it does not invalidate his initial use of the comparative method.

Similarly, the alleged failure of Medlin to adjust his grain size numbers based upon the calculation of the volume fraction of ferrite (an adjustment which the ASTM recommends as part of the intercept method) falls into the same category. Again, the intercept method, assuming Medlin’s use of it to be flawed, was done to check (or to provide a means for others to check) his comparison method result. His failure to perform these calculations did not destroy his original use of the recognized comparison method. At best, it undermines the accuracy of his use of a secondary method to check the accuracy of his preferred method, a fact that can be explored on cross-examination. It does not render his comparative analysis faulty or inadmissible.

The matters raised by Ulma’s motion, if true, may subject Dr. Medlin to a vigorous cross-examination, however they are not grounds to exclude his testimony. Therefore, the motion to exclude the testimony of Dr. Dana J. Medlin is overruled.

SIGNED at Houston, Texas this 28th day of June, 2019.



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Andrew S. Hanen  
United States District Judge